Memory Guidance for Cisco Catalyst 6500 Series Switches

This bulletin provides guidance on various bootflash and DRAMs to be used in Cisco® Catalyst® 6500 Series Switches.

The Cisco Catalyst 6500 has an unparalleled portfolio of features that are mandated by the growing requirements of our customers for scalability, instrumentation, high availability, and other factors. As a consequence, in the future, software images might have an increased effect on memory requirements. Additionally, as the size of Internet routing tables continue to increase, the quantity of routes in enterprise networks will also grow.

The Cisco Catalyst 6500 Series released its latest software image, Cisco IOS® Software Release 12.2(33)SXH, with more than 200 features to cater to different areas of the network such as Data Center, Campus Backbone, Wiring Closet, Enterprise WAN, and Carrier Ethernet. With this software introduction, current default configurations, with the exception of XL configurations, are designed to hold typical enterprise configurations. Typical enterprise configurations are defined as having 25,000 route entries and 4000 access control list (ACL) entries. Table 1 lists upgrade options for various modules with considerations for Bootflash/Compact Flash (Bootdisk)/DRAM upgrade

This does NOT affect the Compact Flash purchase for the supervisor engine's external slot. We suggest that the Compact Flash size for the external slot be at least equivalent to the recommended size for respective supervisor engines.

Figure 1 shows bootflash/Compact Flash (Bootdisk) and DRAM locations on the Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks. For details about individual supervisor engines, see www.cisco.com/en/US/products/hw/switches/ps708/prod_installation_guides_list.html.

Figure 1. Bootflash/Compact Flash (Bootdisk) and DRAM Locations

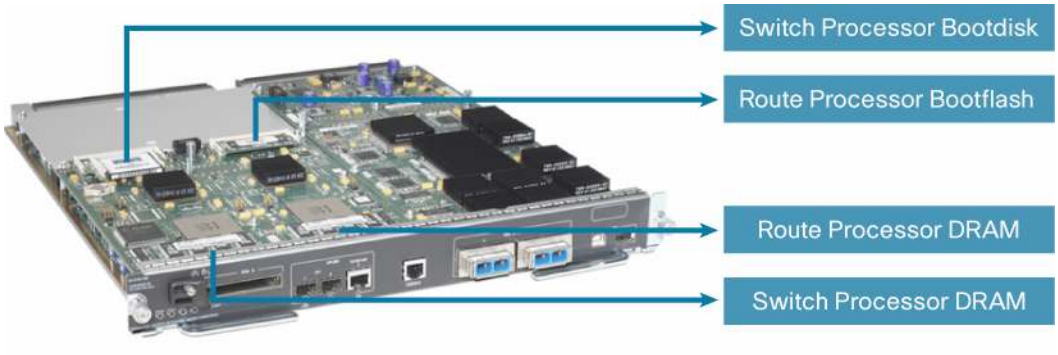

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Table 1. Bootflash/Compact Flash (Bootdisk) and DRAM Upgrade Information

SP = Switch Processor; RP = Route Processor

This table lists only those memory units that need to be upgraded. For complete list of defaults, please see the first question in the FAQ section.

	Boot flash/Compact Flash (Bootdisk)				DRAM			
	Current Default	**Upgrade Recommendations**	**Upgrade Product IDs**	**Upgrade Consideration**	**Current Default**	**Upgrade Recommendations**	**Upgrade Product IDs**	**Upgrade Considerations**
VS-S720-10G-3C/XL	1 GB (SP)	Default sufficient	Default sufficient		1GB (SP) 1GB (RP)	Default sufficient	Default sufficient	
WS-F6700-DFC3C	–	–	–	–	512 MB	Default sufficient	Default sufficient	Default sufficient
WS-Sup720 WS-Sup720-3B	512 MB (SP)*	1 GB (SP)	WS-CF-UPG= with MEM-C6K-CPTFL1GB (SP)	(1) Storing debug information (for example, core dump) (2) Storing more than 3 images	512 MB (SP) 512 MB (RP)	1 GB (SP) 1 GB (RP)	MEM-Sup720-SP-1GB= (SP) MEM-MSFC3-1GB= (RP)	(1) Large route tables >25k entries (2) Premium features (for example, enhanced Fast Software Upgrade [eFSU], In-Service Software Upgrade [ISSU]) (3) Right size memory now for future Cisco IOS Software images on Cisco Catalyst 6500/Cisco 7600 Series Supervisor Engine 720 Cisco Catalyst 6500 Supervisor Engine 32 and ME6524
WS-Sup32-GE-3B WS-Sup32-10GE-3B	256 MB (SP)	512 MB (SP)	MEM-C6K-CPTFL512M= (SP)		512 MB (RP)	1 GB (RP)	MEM-MSFC3-1GB= (RP)	
WS-S32-GE-PISA WS-S32-10GE-PISA	512 MB (SP)	1 GB (SP)	MEM-C6K-CPTFL1GB= (SP)		1 GB (RP)	Default sufficient	Default sufficient	
ME-6524	256 MB (SP)	512 MB (SP)	MEM-C6K-CPTFL512M=		256 MB (RP)	1 GB (RP)	MEM-MSFC3-1GB= (RP)	
WS-F6700-DFC3B	–	–	–	–	256 MB	512 MB	MEM-XCEF720-512M=	

*512 MB is default for software images starting with Cisco IOS Software Release 12.2(18)SXE5 starting May 5, 2006.

Related Information

To see minimum memory requirements for specific images with the Cisco IOS Software Upgrade Planner, visit http://tools.cisco.com/support/downloads/go/MDFTree.x?butype=switches.

Memory installation procedures for various modules are available at www.cisco.com/en/US/products/hw/switches/ps708/prod_installation_guides_list.html.

Q&A

Note: In the following sections SP bootflash/bootdisk refers to “Sup-bootflash” and RP bootflash refers to “bootflash.”

Q. What is the current shipping default memory in Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B, 3BXL), Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks, Cisco Catalyst 6500 Supervisor Engine 32, and ME-6524?

A. Table 2 shows default memory.

Table 2. Default Memory

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Supervisor Engine	SP Bootflash/bootdisk	RP Bootflash	SP DRAM	RP DRAM
VS-S720-10G-3C/XL	1 GB	64 MB	1 GB	1 GB
WS-Sup720 and WS-Sup720-3B	64 MB/512 MB*	64 MB	512 MB	512 MB
WS-Sup720-3BXL	64 MB/512 MB*	64 MB	1 GB	1 GB
WS-S32-GE-PISA/WS-S32-10GE-PISA	512 MB	256 MB	512 MB	1 GB
WS-Sup32-GE-3B/WS-Sup32-10GE-3B	256 MB	64 MB	512 MB**	512 MB**
ME-6524	256 MB	64 MB	256 MB	512 MB**

*64 MB is the default for images below Cisco IOS Software Release 12.2(18)SXE and also for the LAN-only feature set on Cisco IOS Software Release 12.2(18)SXE. Customers might use external Compact Flash to run larger images. 512 MB is the default for software images starting with Cisco IOS Software Release 12.2(18)SXE starting May 5, 2006, except ME-6524 SP DRAM which was still shipping with 256 MB. For more information, see www.cisco.com/en/US/products/hw/switches/ps708/prod_bulletin0900aecd8058b34f.html.
**For orders placed starting 5/5/06

Q. What are the minimum memory requirements for Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B, 3BXL), Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks, Cisco Catalyst 6500 Supervisor Engine 32, and ME-6524, to run Cisco IOS Software Modularity?

A. Table 3 shows minimum memory requirements for Cisco IOS Software Modularity.

Table 3. Minimum Memory Requirements

Supervisor Engine	SP Bootflash/Bootdisk	RP Bootflash	SP DRAM	RP DRAM
WS-Sup720 and WS-Sup720-3B	512 MB*	64 MB	512 MB	512 MB
WS-Sup720-3BXL	512 MB*	64 MB	1 GB	1 GB
Sup32	256 MB	64 MB	512 MB	512 MB
ME-6524	256 MB	64 MB	512 MB	512 MB

*Using an external Compact Flash or the internal Compact Flash adapter.

Q. What is the current shipping default memory for CEF720 distributed forwarding cards (DFCs)?

A. Table 4 shows default memory for CEF720 DFCs.

Table 4. Default Memory for CEF720 DFCs

Product ID	Default DRAM	Upgrade Options
WS-F6700-DFC3A	256 MB	–
WS-F6700-DFC3B	256 MB	MEM-XCEF720-512M=
MEM-XCEF720-1GB=		
WS-F6700-DFC3BXL	1 GB	–
WS-F6700-DFC3C	512 MB	MEM-XCEF720-1GB=
WS-F6700-DFC3CXL	1 GB	–

Q. What is the current shipping default memory for CEF256 DFCs?

A. Table 5 shows default memory for CEF256 DFCs.

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Table 5. Default Memory for CEF256 DFCs

Product ID	Default DRAM	Upgrade Options
WS-F6K-DFC3A*	256 MB	–
WS-F6K-DFC3B*	256 MB	Yes, MEM-XCEF720-512M=, MEM-XCEF720-1GB=
WS-F6K-DFC3BXL*	1 GB	–

*These modules have been announced end of sale (EoS). For more information, see www.cisco.com/en/US/products/hw/switches/ps708/prod_eol_notice0900aecd806d9953.html.

Q. How do I upgrade the internal SP bootflash to a larger size with a Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B, 3BXL)?

A. Table 6 shows upgrade information. Use the Compact Flash memory upgrade kit (WS-CF-UPG=). For upgrade procedure, refer to www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_17277.html

Table 6. Upgrade Information

Product ID	WS-CF-UPG=
List Price	$995
Minimum Cisco IOS Software Release	12.2(18)SXE5 and later; 12.2(18)SXF and later
SP ROMMON Requirement	8.4(2) or later (see note)
Number of Units of Upgrade Kit Required	1 per Cisco Catalyst 6500 Series Supervisor Engine 720 in the chassis
Upgrade Kit Contents	1 unit of Compact Flash adapter and 1 unit of 512 MB Compact Flash, installation guide
Is It Field Upgradable?	Yes

Note: To check the current SP ROMMON version, issue the command remote command switch show version | include strap. The ROMMON upgrade procedure can be found under www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_5631.html.

Note that a detailed installation guide is provided with the upgrade kit.

Q. Will the Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B, 3BXL), Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks ship with internal Compact Flash as an SP bootflash/bootdisk, and if so, when?

A. Yes. The Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B, 3BXL) ships with default 512 MB internal Compact Flash as an SP bootflash/bootdisk for orders placed starting May 5, 2006 provided the appropriate software release is selected in configurator. Starting software is Cisco IOS Software Releases 12.2(18)SXE and 12.2(18)SXF. See Table 6 for exact Cisco IOS Software release details.

Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks ships with 1 GB internal Compact Flash as an SP bootflash/bootdisk.

Q. Can I use a 256 MB Compact Flash with the Compact Flash adapter for internal bootflash/bootdisk?

A. No. 512 MB and 1 GB are the only Compact Flashes qualified and supported.

Q. Is the internal Compact Flash adapter for the SP bootflash/bootdisk also supported in the hybrid Cisco Catalyst OS?

A. No. There is no requirement, from an image size perspective, to support this kind of configuration.

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Q. Can the current RP bootflash Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B, 3BXL), Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks, or Cisco Catalyst 6500 Supervisor Engine 32 be extended beyond 64 MB?

A. No. At this point in time there is no requirement to increase the RP bootflash size on any of these supervisor engines.

Q. My customer ordered a Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B, 3BXL) with an internal CF adapter, but they need to downgrade to a version that does not support the adapter. Can I leave it in and run from an external Cf, or do we need to downgrade?

A. It is recommended to downgrade to 64MB bootflash using the bootflash kit. The product ID for this kit is BF-S720-64MB-SP=. Table 7 provides downgrade information.

Table 7. Downgrade Information

Product ID	BF-S720-64MB-SP=
Availability	Starting November 2006
Minimum Cisco IOS Software Release	12.2(18)SXB or later
Number of Units of Upgrade Kit Required	1 per Cisco Catalyst 6500 Series Supervisor Engine 720 in the chassis
Upgrade Kit Contents	1 unit of 64-MB flash, installation guide
Field Upgradable?	Yes

Note that a detailed installation guide is provided with the bootflash kit. BF-S720-64MB-SP= provides the bootflash downgrade from 512-MB compact flash to 64-MB bootflash for Cisco Catalyst 6500 Series Supervisor Engine 720 units purchased after May 2006.

Q. My customer standardized on dual supervisor engines. Should the memory be the same on both?

A. Yes. Bootflash/Bootdisk and DRAM size on both supervisor engines should be the same. The Cisco Technical Assistance Center (TAC) supports this configuration only.

Q. What is the difference between the SP and RP bootflash/bootdisk?

A. SP bootflash/bootdisk is the location from where the system can load and boot a Cisco IOS Software image. The more SP bootflash/bootdisk space you have, the greater the number of Cisco IOS Software images you have, and the greater the choice in what Cisco IOS Software images you can boot from. An image can be loaded from the SP bootflash/bootdisk using the command boot system flash sup-bootflash:IOS-image-name. Multiple boot system flash commands can exist in the configuration file, and it is the first in the list that will be used as the image from which to boot the system. The RP bootflash can also be used as a storage location for Cisco IOS Software images, although the system cannot directly load an image from that location. The SP and RP bootflash can also be used as a storage location for backup and alternate configuration files. Configuration files that are required to be used as an active configuration must be copied over to the running or startup configuration.

Q. My customer already has a Cisco qualified 512 MB Compact Flash. Can I order the internal Compact Flash adapter without the Compact Flash media?

A. No. The upgrade kit is always bundled with 512 MB or 1 GB Compact Flash media.

Q. Are there any support issues with customers purchasing external Compact Flash from a third-party vendor? Is there an approved vendor list?

A. Refer to www.cisco.com/en/US/customer/products/prod_warranties_item09186a00800b5594.html

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Compact Flash memory cards contain internal controllers. Typically vendors change these internal controllers without notifying/marking it on the outside, visible to the user. In internal engineering validation and field trials, Cisco has found that the quality of these components varies vastly, which in turn affects the life of the Compact Flash. Therefore, Cisco does not support third-party Compact Flash.

In addition, vendors approved by Cisco will provide failure analysis reports for failed Compact Flash units, which is not available for third-party Compact Flash.

Q. Can I increase the DRAM in the Cisco Catalyst 6500 Series Supervisor Engine 720 (WS-Sup720; 3A version)?

A. No. DRAM memory is fixed at 512 MB for the Cisco Catalyst 6500 Series Supervisor Engine 720 (WS-Sup720; 3A version).

Q. What does a customer that wants to upgrade Cisco Catalyst 6500 Series Supervisor Engine 720 (3A, 3B) to Cisco Catalyst 6500 Series/7600 Series Supervisor Engine 720-3BXLs and Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks (3C version) to Cisco Virtual Switching Supervisor Engine 720 with 10 Gigabit Ethernet Uplinks (3CXL version) have to order? What is the part number for the upgrade?

A. To upgrade from WS-Sup720 or WS-Sup720-3B to WS-Sup720-3BXL, customers need to order WS-F6K-PFC3BXL. The Upgrade kit comes with 1GB DRAM upgrades for both the RP and SP.

To upgrade from VS-S720-10G-Sup720-3C to VS-S720-10G-3CXL, customers need to order VS-F6K-PFC3CXL. Since the PFC3C and PFC3CXL versions of the VS-S720-10G supervisor have 1GB of DRAM for the RP and SP by default, no additional memory is shipped with the upgrade kit.

For installation, refer to www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html .

Q. I know that the Cisco Catalyst 6500 Series Supervisor Engine 2 has reached EoS. But is there a 128 MB/256 MB Personal Computer Memory Card International Association (PCMCIA) or ATA flash card for the Cisco Catalyst 6500 Series Supervisor Engine 2 for image upgrade?

A. No. There is no requirement to support 128 MB/256 MB PCMCIA or ATA flash cards for the Cisco Catalyst 6500 Series Supervisor Engine 2.

Q. What are the memory requirements for the Cisco Catalyst 6500 Series Supervisor Engine 2 to load Cisco IOS Software Release 12.2(18) SXF?

A. Table 8 shows the memory requirements.

Table 8. Cisco Catalyst 6500 Series Supervisor Engine 2 requirements for Cisco IOS Software Release 12.2(18) SXF

Supervisor Engine	SP Bootflash	RP Bootflash	SP DRAM	RP DRAM
S2-PFC2	32 MB*	–	256 MB	–
S2-MSFC2	32 MB*	32 MB	256 MB	256 MB
S2U-MSFC2	32 MB*	32 MB	512 MB	512 MB

*Use an external PCMCIA ATA flash card, part number MEM-C6K-ATA-1-64M=. EoS for this part number will be announced soon

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For More Information

For more information about the Cisco Catalyst 6500 Series Switches, visit www.cisco.com/en/US/products/hw/switches/ps708/index.html.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
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